

# SEQUENCE LISTING

<110> Dehesh, Katayoon

<120> Plant Fatty Acid Synthases and Use in Improved Methods for Production of Medium-Chain Fatty Acids

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<160> 17

<170> PatentIn version 3.1

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Arg Lys Ile Thr Pro Phe Phe Ile Pro Tyr Ala Ile Thr Asn Met Gly  
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Ile Ser Thr Ala Cys Ala Thr Ser Asn Tyr Cys Phe His Ala Ala Ala  
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Leu Glu Asp Ala Gly Val Ser Pro Glu Glu Val Asn Tyr Ile Asn Ala  
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His Ala Thr Ser Thr Leu Ala Gly Asp Leu Ala Glu Ile Asn Ala Ile  
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Lys Lys Val Phe Lys Asn Thr Lys Asp Ile Lys Ile Asn Ala Thr Lys  
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Ala Thr Ile Lys Gly Ile Asn Thr Gly Trp Leu His Pro Ser Ile Asn  
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Tyr Tyr Glu Lys Leu Leu Ser Gly Glu Ser Gly Ile Ser Leu Ile Asp  
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Arg Phe Asp Ala Ser Lys Phe Pro Thr Arg Phe Gly Gly Gln Ile Arg  
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Asp Asp Cys Leu Arg Tyr Cys Ile Val Ala Gly Lys Lys Ala Leu Glu  
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Asn Ser Asp Leu Gly Gly Glu Ser Leu Ser Lys Ile Asp Lys Glu Arg  
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Phe Phe Ile Pro Tyr Ala Ile Thr Asn Met Gly Ser Ala Leu Leu Ala  
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Ile Asp Leu Gly Leu Met Gly Pro Asn Tyr Ser Ile Ser Thr Ala Cys  
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Pro Ile Gly Leu Gly Gly Phe Val Ala Cys Arg Ala Leu Ser Gln Arg  
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Asn Asp Asp Pro Gln Thr Ala Ser Arg Pro Trp Asp Lys Asp Arg Asp  
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Gly Leu Gly Val Ser Ser Cys Ile Glu Ser Ser Leu Glu Asp Ala Gly  
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Pro Ser Val Glu Phe Asp Thr Val Ala Asn Lys Lys Gln Gln His Glu  
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Ser His Lys Arg Leu Arg Leu Ser Arg Arg Arg Arg Thr Leu Ser Ser  
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His Cys Ser Leu Arg Gly Ser Thr Phe Gln Cys Leu Asp Pro Cys Asn  
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Gln Gln Arg Phe Leu Gly Asp Asn Gly Phe Ala Ser Leu Phe Gly Ser  
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Lys Pro Leu Arg Ser Asn Arg Gly His Leu Arg Leu Gly Arg Thr Ser  
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His Ser Gly Glu Val Met Ala Val Ala Met Gln Pro Ala Gln Glu Val  
 100 105 110

Ser Thr Asn Lys Lys Pro Ala Thr Lys Gln Arg Arg Val Val Val Thr  
 115 120 125

Gly Met Gly Val Val Thr Pro Leu Gly His Asp Pro Asp Val Tyr Tyr  
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Asn Asn Leu Leu Asp Gly Ile Ser Gly Ile Ser Glu Ile Glu Asn Phe  
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Asp Cys Ser Gln Phe Pro Thr Arg Ile Ala Gly Glu Ile Lys Ser Phe  
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Ser Thr Asp Gly Trp Val Ala Pro Lys Phe Ser Glu Arg Met Asp Lys  
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Phe Met Leu Tyr Met Leu Thr Ala Gly Lys Lys Ala Leu Ala Asp Gly  
 195 200 205

Gly Ile Thr Glu Asp Ala Met Lys Glu Leu Asn Lys Arg Lys Cys Gly  
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Val Leu Ile Gly Ser Gly Leu Gly Gly Met Lys Val Phe Ser Asp Ser  
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Ile Glu Ala Leu Arg Thr Ser Tyr Lys Lys Ile Ser Pro Phe Cys Val  
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Pro Phe Ser Thr Thr Asn Met Gly Ser Ala Ile Leu Ala Met Asp Leu  
 260 265 270

Gly Trp Met Gly Pro Asn Tyr Ser Ile Ser Thr Ala Cys Ala Thr Ser  
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Asn Phe Cys Ile Leu Asn Ala Ala Asn His Ile Ile Lys Gly Glu Ala  
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Pro Thr Lys Ala Ser Arg Pro Trp Asp Ser Asn Arg Asp Gly Phe Val  
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Lys Lys Arg Gly Ala Thr Ile Tyr Ala Glu Phe Leu Gly Gly Ser Phe  
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Thr Cys Asp Ala Tyr His Met Thr Glu Pro His Pro Glu Gly Ala Gly  
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Val Ile Leu Cys Ile Glu Lys Ala Leu Ala Gln Ser Gly Val Ser Arg  
 405 410 415

Glu Asp Val Asn Tyr Ile Asn Ala His Ala Thr Ser Thr Pro Ala Gly  
 420 425 430

Asp Ile Lys Glu Tyr Gln Ala Leu Ala His Cys Phe Gly Gln Asn Ser  
 435 440 445

Glu Leu Arg Val Asn Ser Thr Lys Ser Met Ile Gly His Leu Leu Gly  
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Gly Ala Gly Gly Val Glu Ala Val Ala Val Val Gln Ala Ile Arg Thr  
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Gly Trp Ile His Pro Asn Ile Asn Leu Glu Asp Pro Asp Glu Gly Val  
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Asp Ala Lys Leu Leu Val Gly Pro Lys Lys Glu Lys Leu Lys Val Lys  
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 35 40 45

Ala Gln Phe Pro Thr Arg Ile Ala Gly Glu Ile Lys Ser Phe Ser Thr  
 50 55 60

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Leu	Tyr	Met	Leu	Thr	Ala	Gly	Lys	Lys	Ala	Leu	Thr	Asn	Gly	Gly	Ile	85	90	95	
Thr	Glu	Asp	Val	Met	Lys	Glu	Leu	Asp	Lys	Arg	Lys	Cys	Gly	Val	Leu	100	105	110	
Ile	Gly	Ser	Ala	Met	Gly	Gly	Met	Lys	Val	Phe	Asn	Asp	Ala	Ile	Glu	115	120	125	
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Cys	Ile	Leu	Asn	Ala	Ala	Asn	His	Ile	Ile	Arg	Gly	Glu	Ala	Asp	Val	180	185	190	
Met	Leu	Cys	Gly	Gly	Ser	Asp	Ala	Val	Ile	Ile	Pro	Ile	Gly	Met	Gly	195	200	205	
Gly	Phe	Val	Ala	Cys	Arg	Ala	Leu	Ser	Gln	Arg	Asn	Ala	Asp	Pro	Thr	210	215	220	
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Glu	Gly	Ala	Gly	Val	Leu	Leu	Leu	Glu	Glu	Leu	Glu	His	Ala	Lys	Lys	245	250	255	
Arg	Gly	Ala	Thr	Ile	Tyr	Ala	Glu	Phe	Leu	Gly	Gly	Ser	Phe	Thr	Cys	260	265	270	
Asp	Ala	Tyr	His	Met	Thr	Glu	Pro	His	Pro	Asp	Gly	Ala	Gly	Val	Ile	275	280	285	

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Val Asn Tyr Ile Asn Ala His Ala Thr Ser Thr Pro Ala Gly Asp Ile  
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Lys Glu Tyr Gln Ala Leu Ile His Cys Phe Gly Gln Asn Asn Glu Leu  
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Gly Gly Val Glu Ala Val Ser Val Val Gln Ala Ile Arg Thr Gly Trp  
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Ile His Pro Asn Ile Asn Leu Glu Asn Pro Asp Glu Gly Val Asp Thr  
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 cgccgccatg cattccctcc agtcaccctc ccttcggggc tccccgctcg accccttccg 180  
 ccccaaata tccaccgtcc gccccctcca ccgagcatca attcccaacg tccgggcccgc 240  
 ttccccacc gtctccgctc ccaagcgcgga gaccgacccc aagaagcgcg tcgtgatcac 300  
 cggaatgggc cttgtctccg ttttcggctc cgacgtcgat gcgtactacg acaagctcct 360  
 gtcaggcgag agcgggatcg gcccaatcga ccgcttcgac gcctccaagt tccccaccag 420

gttcggcggc cagattcgtg gtttcaaactc catgggatac attgacggca aaaacgacag 480  
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 cgatctcggg gccgaccgcc tctccaagat cgacaaggag agagccggag tgctggttg 600  
 gacaggaatg ggtggtctga ctgtcttctc tgacgggggt caatctctta tcgagaagg 660  
 tcaccgaaa atcaccctt tttcatccc ctatgccatt acaaactgg ggtctgccct 720  
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 ttccaactac tgcttccatg ctgctgctaa tcatatccgc cgtggtgagg ctgatcttat 840  
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 cagggctctg tctcaaagga acgatgacc tcagactgcc tctaggccct gggataaaga 960  
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 ggctttctcg gctttcaagc catgattacc catttcacaa ggcacttgtc attgagagta 1560  
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 <211> 465  
 <212> PRT  
 <213> *Cuphea pulcherrima*

<400> 10

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Phe Arg Pro Lys Ser Ser Thr Val Arg Pro Leu His Arg Ala Ser Ile

20

25

30

Pro Asn Val Arg Ala Ala Ser Pro Thr Val Ser Ala Pro Lys Arg Glu  
 35 40 45

Thr Asp Pro Lys Lys Arg Val Val Ile Thr Gly Met Gly Leu Val Ser  
 50 55 60

Val Phe Gly Ser Asp Val Asp Ala Tyr Tyr Asp Lys Leu Leu Ser Gly  
 65 70 75 80

Glu Ser Gly Ile Gly Pro Ile Asp Arg Phe Asp Ala Ser Lys Phe Pro  
 85 90 95

Thr Arg Phe Gly Gly Gln Ile Arg Gly Phe Asn Ser Met Gly Tyr Ile  
 100 105 110

Asp Gly Lys Asn Asp Arg Arg Leu Asp Asp Cys Leu Arg Tyr Cys Ile  
 115 120 125

Val Ala Gly Lys Lys Ser Leu Glu Asp Ala Asp Leu Gly Ala Asp Arg  
 130 135 140

Leu Ser Lys Ile Asp Lys Glu Arg Ala Gly Val Leu Val Gly Thr Gly  
 145 150 155 160

Met Gly Gly Leu Thr Val Phe Ser Asp Gly Val Gln Ser Leu Ile Glu  
 165 170 175

Lys Gly His Arg Lys Ile Thr Pro Phe Phe Ile Pro Tyr Ala Ile Thr  
 180 185 190

Asn Met Gly Ser Ala Leu Leu Ala Ile Glu Leu Gly Leu Met Gly Pro  
 195 200 205

Asn Tyr Ser Ile Ser Thr Ala Cys Ala Thr Ser Asn Tyr Cys Phe His  
 210 215 220

Ala Ala Ala Asn His Ile Arg Arg Gly Glu Ala Asp Leu Met Ile Ala  
 225 230 235 240

Gly Gly Thr Glu Ala Ala Ile Ile Pro Ile Gly Leu Gly Gly Phe Val

				245					250					255			
Ala	Cys	Arg	Ala	Leu	Ser	Gln	Arg	Asn	Asp	Asp	Pro	Gln	Thr	Ala	Ser		
			260					265					270				
Arg	Pro	Trp	Asp	Lys	Asp	Arg	Asp	Gly	Phe	Val	Met	Gly	Glu	Gly	Ala		
		275					280					285					
Gly	Val	Leu	Val	Leu	Glu	Ser	Leu	Glu	His	Ala	Met	Lys	Arg	Gly	Ala		
	290					295					300						
Pro	Ile	Ile	Ala	Glu	Tyr	Leu	Gly	Gly	Ala	Ile	Asn	Cys	Asp	Ala	Tyr		
305					310					315					320		
His	Met	Thr	Asp	Pro	Arg	Ala	Asp	Gly	Leu	Gly	Val	Ser	Ser	Cys	Ile		
				325					330					335			
Glu	Ser	Ser	Leu	Glu	Asp	Ala	Gly	Val	Ser	Pro	Glu	Glu	Val	Asn	Tyr		
			340					345					350				
Ile	Asn	Ala	His	Ala	Thr	Ser	Thr	Leu	Ala	Gly	Asp	Leu	Ala	Glu	Ile		
		355					360					365					
Asn	Ala	Ile	Lys	Lys	Val	Phe	Lys	Asn	Thr	Lys	Asp	Ile	Lys	Ile	Asn		
	370					375					380						
Ala	Thr	Lys	Ser	Met	Ile	Gly	His	Cys	Leu	Gly	Ala	Ser	Gly	Gly	Leu		
385					390					395					400		
Glu	Ala	Ile	Ala	Thr	Ile	Lys	Gly	Ile	Asn	Thr	Gly	Trp	Leu	His	Pro		
				405					410					415			
Ser	Ile	Asn	Gln	Phe	Asn	Pro	Glu	Pro	Ser	Val	Glu	Phe	Asp	Thr	Val		
			420					425					430				
Ala	Asn	Lys	Lys	Gln	Gln	His	Glu	Val	Asn	Val	Ala	Ile	Ser	Asn	Ser		
		435					440					445					
Phe	Gly	Phe	Gly	Gly	His	Asn	Ser	Val	Val	Ala	Phe	Ser	Ala	Phe	Lys		
	450					455					460						
Pro																	
465																	

<210> 11  
 <211> 1802  
 <212> DNA  
 <213> *Cuphea pulcherrima*

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 cccctcccct ctcgagccct tccgcctcaa ttccccctcc tccgcgcgcg ctctccgccc 180  
 cctccgtcgc gccagcctcc ccgtcatccg tgctgccacc gcctccgccc ccaagcgcga 240  
 gtccgacccc aagaagcggg tcgtcatcac cggcatgggc ctcgctcctcg tcttcggctc 300  
 cgacgtcgac gcctactacg acaagctgct ctccggcgag agcggcatca gcctaatcga 360  
 ccgcttcgac gcttccaaat tccccaccag gttcgccggc cagatccgtg gcttcaacgc 420  
 gacgggctac atcgacggca agaacgaccg gcggctcgac gattgcctcc gctactgcat 480  
 tgctgcgcgc aagaaggctc tcgaagacgc cgatctcgcc ggccaatccc tctccaagat 540  
 tgataaggag agggccggag tgctagttgg aaccggtatg ggtggcctaa ctgtcttctc 600  
 tgacgggggt cagaatctca tcgagaaagg tcaccggaag atctccccgt ttttcattcc 660  
 atatgccatt acaaacatgg ggtctgcgct gcttgccatc gatttgggtc tgatgggccc 720  
 aaactattcg atttcaactg catgtgctac ttccaactac tgcttttatg ctgccgcaa 780  
 tcatatccgc cgaggtgagg ctgacctgat gattgctgga ggaactgagg ctgcggtcat 840  
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 tcagactgcc tcaaggccgt gggataagga ccgtgatggc tttgtgatgg gtgaaggggc 960  
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 agaatatttg ggaggtgcag tcaactgtga tgcttatcat atgactgac caagggctga 1080  
 tgggcttggg gtctcctcgt gcattgagag cagtctcgaa gatgccgggg tctcacctga 1140  
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 aatgccatt aagaaagttt tcaagaacac caaggaaatc aaaatcaatg caactaagtc 1260  
 aatgatcgga cactgtcttg gagcatcagg aggtcttgaa gccatcgcaa ccattaaggg 1320  
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 ttttggaattt ggagggcaca actcggttgt ggcattctca gctttcaagc catgaattct 1500

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 ctctgattta tgtattagaa agaccaatga aagattttgt gtcattgttg tgttgtcaat 1740  
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<210> 12  
 <211> 467  
 <212> PRT  
 <213> Cuphea pulcherrima  
 <400> 12

Met Gln Ser Leu His Ser Pro Ser Leu Arg Pro Ser Pro Leu Glu Pro  
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Phe Arg Leu Asn Ser Pro Ser Ser Ala Ala Ala Leu Arg Pro Leu Arg  
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Arg Ala Ser Leu Pro Val Ile Arg Ala Ala Thr Ala Ser Ala Pro Lys  
 35 40 45

Arg Glu Ser Asp Pro Lys Lys Arg Val Val Ile Thr Gly Met Gly Leu  
 50 55 60

Val Ser Val Phe Gly Ser Asp Val Asp Ala Tyr Tyr Asp Lys Leu Leu  
 65 70 75 80

Ser Gly Glu Ser Gly Ile Ser Leu Ile Asp Arg Phe Asp Ala Ser Lys  
 85 90 95

Phe Pro Thr Arg Phe Ala Gly Gln Ile Arg Gly Phe Asn Ala Thr Gly  
 100 105 110

Tyr Ile Asp Gly Lys Asn Asp Arg Arg Leu Asp Asp Cys Leu Arg Tyr  
 115 120 125

Cys Ile Val Ala Gly Lys Lys Ala Leu Glu Asp Ala Asp Leu Ala Gly  
 130 135 140

Gln Ser Leu Ser Lys Ile Asp Lys Glu Arg Ala Gly Val Leu Val Gly  
 145 150 155 160

Thr Gly Met Gly Gly Leu Thr Val Phe Ser Asp Gly Val Gln Asn Leu  
 165 170 175

Ile Glu Lys Gly His Arg Lys Ile Ser Pro Phe Phe Ile Pro Tyr Ala  
 180 185 190

Ile Thr Asn Met Gly Ser Ala Leu Leu Ala Ile Asp Leu Gly Leu Met  
 195 200 205

Gly Pro Asn Tyr Ser Ile Ser Thr Ala Cys Ala Thr Ser Asn Tyr Cys  
 210 215 220

Phe Tyr Ala Ala Ala Asn His Ile Arg Arg Gly Glu Ala Asp Leu Met  
 225 230 235 240

Ile Ala Gly Gly Thr Glu Ala Ala Val Ile Pro Ile Gly Leu Gly Gly  
 245 250 255

Phe Val Ala Cys Arg Ala Leu Ser Gln Arg Asn Asp Asp Pro Gln Thr  
 260 265 270

Ala Ser Arg Pro Trp Asp Lys Asp Arg Asp Gly Phe Val Met Gly Glu  
 275 280 285

Gly Ala Gly Val Leu Val Met Glu Ser Leu Glu His Ala Met Lys Arg  
 290 295 300

Gly Ala Pro Ile Ile Ala Glu Tyr Leu Gly Gly Ala Val Asn Cys Asp  
 305 310 315 320

Ala Tyr His Met Thr Asp Pro Arg Ala Asp Gly Leu Gly Val Ser Ser  
 325 330 335

Cys Ile Glu Ser Ser Leu Glu Asp Ala Gly Val Ser Pro Glu Glu Val  
 340 345 350

Asn Tyr Ile Asn Ala His Ala Thr Ser Thr Leu Ala Gly Asp Leu Ala  
 355 360 365

Glu Ile Asn Ala Ile Lys Lys Val Phe Lys Asn Thr Lys Glu Ile Lys

370                                      375                                      380  
 Ile Asn Ala Thr Lys Ser Met Ile Gly His Cys Leu Gly Ala Ser Gly  
 385                                      390                                      395                                      400  
 Gly Leu Glu Ala Ile Ala Thr Ile Lys Gly Ile Thr Thr Gly Trp Leu  
                                     405                                      410                                      415  
 His Pro Ser Ile Asn Gln Phe Asn Pro Glu Pro Ser Val Asp Phe Asn  
                                     420                                      425                                      430  
 Thr Val Ala Asn Lys Lys Gln Gln His Glu Val Asn Val Ala Ile Ser  
                                     435                                      440                                      445  
 Asn Ser Phe Gly Phe Gly Gly His Asn Ser Val Val Ala Phe Ser Ala  
                                     450                                      455                                      460  
 Phe Lys Pro  
 465

<210> 13  
 <211> 2369  
 <212> DNA  
 <213> *Cuphea pulcherrima*

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 attccgctga tccattttcc gccttttccg ggtctttcat cccaaagggt atccttttct 180  
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 gcttcccctc tctgtacgtg gtccttgcc gcctgcatgt ctacctcctt ccaccctcc 300  
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 aagccaagta tcaaacagcg gcgagtagtt gtgactggaa tgggtgtggg gactcctcta 660  
 ggccatgacc ctgatgtttt ctacaataat ctgcttgatg gaacgagtgg cataagcgag 720

atagagacct ttgattgtgc tcaatttcct acgagaattg ctggagagat caagtctttc	780
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atgctgaccg ctggcaagaa agcattaaca gatgggtgaa tcaccgaaga tgtgatgaaa	900
gagctagata aaagaaaatg cggagttctc attggctcag caatgggtgg aatgaaggta	960
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aaccatataa tcagaggcga agcagatgtg atgctttgcg ggggctcaga tgcggtaatc	1200
atacctattg gtatgggagg ttttgttgca tgccgagctt tgtcccagag aaattccgac	1260
cctactaaag cttcaagacc atgggacagt aatcgtgatg gatttgttat gggggaagga	1320
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gcagaatttc taggtgggag tttcacttgc gatgcctacc acatgaccga gcctcaccct	1440
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cacgtagtaa ccatttgccc tttgttttgc tctctatttc atcaccgttt tgtggtttta	2220
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<210> 14  
 <211> 546  
 <212> PRT  
 <213> *Cuphea pulcherrima*

<400> 14

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Leu Ala Ala Cys Met Ser Thr Ser Phe His Pro Ser Asp Pro Leu Pro  
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Pro Ser Ile Ser Ser Pro Arg Arg Arg Leu Ser Arg Arg Arg Ile Leu  
 35 40 45

Ser Gln Cys Ala Pro Leu Pro Ser Ala Ser Ser Ala Leu Arg Gly Ser  
 50 55 60

Ser Phe His Thr Leu Val Thr Ser Tyr Leu Ala Cys Phe Glu Pro Cys  
 65 70 75 80

His Asp Tyr Tyr Thr Ser Ala Ser Leu Phe Gly Ser Arg Pro Ile Arg  
 85 90 95

Thr Thr Arg Arg His Arg Arg Leu Asn Arg Ala Ser Pro Ser Arg Glu  
 100 105 110

Ala Met Ala Val Ala Leu Gln Pro Glu Gln Glu Val Thr Thr Lys Lys  
 115 120 125

Lys Pro Ser Ile Lys Gln Arg Arg Val Val Val Thr Gly Met Gly Val  
 130 135 140

Val Thr Pro Leu Gly His Asp Pro Asp Val Phe Tyr Asn Asn Leu Leu  
 145 150 155 160

Asp Gly Thr Ser Gly Ile Ser Glu Ile Glu Thr Phe Asp Cys Ala Gln  
 165 170 175

Phe Pro Thr Arg Ile Ala Gly Glu Ile Lys Ser Phe Ser Thr Asp Gly  
 180 185 190

Trp Val Ala Pro Lys Leu Ser Lys Arg Met Asp Lys Phe Met Leu Tyr

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Met	Leu	Thr	Ala	Gly	Lys	Lys	Ala	Leu	Thr	Asp	Gly	Gly	Ile	Thr	Glu
210						215					220				
Asp	Val	Met	Lys	Glu	Leu	Asp	Lys	Arg	Lys	Cys	Gly	Val	Leu	Ile	Gly
225					230					235					240
Ser	Ala	Met	Gly	Gly	Met	Lys	Val	Phe	Asn	Asp	Ala	Ile	Glu	Ala	Leu
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Arg	Ile	Ser	Tyr	Lys	Lys	Met	Asn	Pro	Phe	Cys	Val	Pro	Phe	Ala	Thr
			260					265					270		
Thr	Asn	Met	Gly	Ser	Ala	Met	Leu	Ala	Met	Asp	Leu	Gly	Trp	Met	Gly
		275					280					285			
Pro	Asn	Tyr	Ser	Ile	Ser	Thr	Ala	Cys	Ala	Thr	Ser	Asn	Phe	Cys	Ile
	290					295					300				
Met	Asn	Ala	Ala	Asn	His	Ile	Ile	Arg	Gly	Glu	Ala	Asp	Val	Met	Leu
305					310					315					320
Cys	Gly	Gly	Ser	Asp	Ala	Val	Ile	Ile	Pro	Ile	Gly	Met	Gly	Gly	Phe
				325					330					335	
Val	Ala	Cys	Arg	Ala	Leu	Ser	Gln	Arg	Asn	Ser	Asp	Pro	Thr	Lys	Ala
			340					345					350		
Ser	Arg	Pro	Trp	Asp	Ser	Asn	Arg	Asp	Gly	Phe	Val	Met	Gly	Glu	Gly
		355					360					365			
Ala	Gly	Val	Leu	Leu	Leu	Glu	Glu	Leu	Glu	His	Ala	Lys	Lys	Arg	Gly
	370					375					380				
Ala	Thr	Ile	Tyr	Ala	Glu	Phe	Leu	Gly	Gly	Ser	Phe	Thr	Cys	Asp	Ala
385					390					395					400
Tyr	His	Met	Thr	Glu	Pro	His	Pro	Asp	Gly	Ala	Gly	Val	Ile	Leu	Cys
				405					410					415	
Ile	Glu	Lys	Ala	Leu	Ala	Gln	Ser	Gly	Val	Ser	Arg	Glu	Asp	Val	Asn
			420					425					430		

Tyr Ile Asn Ala His Ala Thr Ser Thr Pro Ala Gly Asp Ile Lys Glu  
 435 440 445

Tyr Gln Ala Leu Ile His Cys Phe Gly Gln Asn Arg Glu Leu Lys Val  
 450 455 460

Asn Ser Thr Lys Ser Met Ile Gly His Leu Leu Gly Ala Ala Gly Gly  
 465 470 475 480

Val Glu Ala Val Ser Val Val Gln Ala Ile Arg Thr Gly Trp Ile His  
 485 490 495

Pro Asn Ile Asn Leu Glu Asn Pro Asp Glu Gly Val Asp Thr Lys Leu  
 500 505 510

Leu Val Gly Pro Lys Lys Glu Arg Leu Asn Val Lys Val Gly Leu Ser  
 515 520 525

Asn Ser Phe Gly Phe Gly Gly His Asn Ser Ser Ile Leu Phe Ala Pro  
 530 535 540

Tyr Ile  
 545

<210> 15  
 <211> 2372  
 <212> DNA  
 <213> Cuphea pulcherrima

<220>  
 <221> misc\_feature  
 <222> (1)..(2300)  
 <223> unsure at all n locations

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 ataaaagaga gagagaggga tccatcgaat gcggccaccc tcctttcatc ttcgattcat 180  
 taccatacca ttccgctgat ccattttccg ccttttccgg gtctttcatc ccaaagggta 240  
 tccttttcta tcctatcttc tcaaagggtc agtcagttcc ctccaatgcc tgccgcctct 300

tccctgctcg cttccctct ctgtacgtgg ctcttggcg cctgcatgtc tacctccttc	360
caccctccg accctcttcc gccttccatc tctctctctc gccgacgct cttccgcgcg	420
cggattctct cccaatgcgc ccactacct tctgttctct ccgccctccg cggatccagt	480
ttccataccc tgcgcacctc ttacctcgcc tgcttcgagc cctgccatga ctactataca	540
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cgagcttccc cttccagggg aggcaatggc cgtggctctg caacctgaac aggaagttac	660
cacaaagaag aagccaagta tcaaacagcg gcgagtagtt gtgactggaa tgggtgtggt	720
gactcctcta ggccatgaac ctgatgtttt tctacaataa tctgcttgat ggaacgagt	780
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gaatgaaggt attcaatgat gccattgaag ccctaaggat ttcataataa aagatgaatc	1080
ccttttgtgt acctttcgct accacaaata tgggatcagc tatgcttgca atggacttgg	1140
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Arg Gln Ser Leu Gly Asp Ser Arg Ser Pro Arg Leu Val Ser Arg Gly  
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Cys Lys Leu Ile Gly Ser Gly Ser Ala Ile Pro Ala Leu Gln Val Ser  
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Asn Asp Asp Leu Ala Lys Ile Val Asp Thr Asn Asp Glu Trp Ile Thr  
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Val Arg Thr Gly Ile Arg Asn Arg Arg Val Leu Ser Gly Lys Asp Ser

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105

110

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Cys Lys Lys Asn Pro Leu Ser Tyr Asp Ile Thr Ala Ala Cys Ser Gly  
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Asp Trp Thr Asp Arg Gly Thr Cys Ile Leu Phe Gly Asp Ala Ala Gly  
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Ile Lys Glu Asp Glu Val Asp Lys Ala Leu Gly His Asn Gly Ser Ile  
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Arg Asp Phe Pro Pro Arg Arg Ser Ser Tyr Ser Cys Ile Gln Met Asn  
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Glu Ser Ala Leu Gly Lys Ala Gly Leu Asn Gly Ser Asn Ile Asp Trp  
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